

In The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-76. (Cancelled.)

77. (Currently Amended.) A process for the production of purified biodiesel from a feedstock containing at least one fatty acid, the process comprising:

(A) converting the at least one fatty acid in the feedstock to a glyceride;

(B) reacting the glyceride with at least one alcohol to produce a fatty acid alkyl ester wherein the reaction is conducted in a transesterification reactor and further wherein the at least one alcohol is added to the transesterification reactor at a rate that is greater than the stoichiometric amount of alcohol required for transesterification; and

(C) separating the product of step (B) into a fatty acid alkyl ester rich stream and a glycerin rich stream; and

(D) purifying the fatty acid alkyl ester rich stream by distillation or fractionation to produce purified biodiesel having an acid number less than or equal to 0.80 mg KOH/g and total glycerin less than or equal to 0.240% mass without subjecting the fatty acid alkyl ester rich stream to water washing.

78. (Previously presented.) The process of Claim 77, wherein step (A) comprises mixing the feedstock with glycerin for a time sufficient to convert the at least one fatty acid in the feedstock to a glyceride.

79. (Previously presented.) The process of Claim 78, wherein the feedstock and glycerin is mixed at an elevated temperature in the absence of a catalyst.

80. (Previously presented.) The process of Claim 77, wherein step (B) comprises reacting the glyceride with the at least one alcohol in the presence of an alkali catalyst to produce glycerin and the fatty acid alkyl ester.
81. (Previously presented.) The process of Claim 78, wherein the glycerin is purified.
82. (Canceled)
83. (Previously presented.) The process of Claim 78, wherein the at least one fatty acid in the feedstock is converted to a glyceride by adding glycerin to the feedstock while mixing and subjecting the admixture to reduced pressure.
84. (Previously presented.) The process of Claim 77, wherein prior to step (A) the feedstock is conditioned to remove solids.
85. (Previously presented.) The process of Claim 78, wherein the at least one fatty acid in the feedstock is converted to a glyceride in a glycerolysis reactor and further wherein glycerin is continuously added at a rate greater than the stoichiometric amount of glycerin required for glycerolysis.
86. (Previously presented.) The process of Claim 77, wherein the feedstock comprises at least one fatty acid at a concentration in the range of about 3 to about 97 percent by weight.
87. (Previously presented.) The process of Claim 85, wherein in step (A) glycerin is continuously added to the glycerolysis reactor at a rate in the range of about 110 percent to about 400 percent of the stoichiometric amount of glycerin required for glycerolysis.
88. (Previously presented.) The process of Claim 77, wherein in step (B) the alcohol is added at a rate equal to about 200 percent of the stoichiometric amount of alcohol

required for transesterification.

89. (Previously Presented) The process of Claim 77, wherein the process is continuous.

90-98. (Cancelled.)

99. (Previously presented.) The process of Claim 198, wherein the at least two reactors have a combined residence time of not more than about 500 minutes.

100-121. (Cancelled.)

122. (Previously Presented) The process of Claim 95, further comprising adjusting the pH of the glycerin rich stream by adding an acid solution thereto.

123-197. (Cancelled.)

198. (Currently Amended.) ~~the method of Claim 78,~~ A process for the production of purified biodiesel from a feedstock containing at least one fatty acid, the process comprising:

(A) converting the at least one fatty acid in the feedstock to a glyceride;

(B) reacting the glyceride with at least one alcohol to produce a fatty acid alkyl ester wherein the reaction is conducted in a transesterification reactor and further wherein the at least one alcohol is added to the transesterification reactor at a rate that is greater than the stoichiometric amount of alcohol required for transesterification; and

(C) separating the product of step (B) into a fatty acid alkyl ester rich stream and a glycerin rich stream; and

(D) purifying the fatty acid alkyl ester rich stream by distillation or fractionation to produce purified biodiesel having an acid number less than or equal to 0.80 mg KOH/g and total glycerin less than or equal to 0.240% mass;

wherein step (A) comprises mixing the feedstock with glycerin for a time sufficient to convert the at least one fatty acid in the feedstock to a glyceride;

wherein the feedstock and glycerin are reacted in at least two continuous stirred tank reactors.

199-224. (Cancelled.)

225. (Currently Amended.) ~~The process of Claim 77,~~ A process for the production of purified biodiesel from a feedstock containing at least one fatty acid, the process comprising:

(A) converting the at least one fatty acid in the feedstock to a glyceride;

(B) reacting the glyceride with at least one alcohol to produce a fatty acid alkyl ester wherein the reaction is conducted in a transesterification reactor and further wherein the at least one alcohol is added to the transesterification reactor at a rate that is greater than the stoichiometric amount of alcohol required for transesterification; and

(C) separating the product of step (B) into a fatty acid alkyl ester rich stream and a glycerin rich stream; and

(D) purifying the fatty acid alkyl ester rich stream by distillation or fractionation to produce purified biodiesel having an acid number less than or equal to 0.80 mg KOH/g and total glycerin less than or equal to 0.240% mass;

wherein the purified biodiesel produced in step (D) meets ASTM specification D 6751.

226. (Cancelled.)

227. (New.) A process for the production of purified biodiesel from a feedstock containing at least one fatty acid, the process comprising:

(A) converting the at least one fatty acid in the feedstock to a glyceride;

(B) reacting the glyceride with at least one alcohol to produce a fatty acid alkyl ester wherein the reaction is conducted in a transesterification reactor and further wherein the at least one alcohol is added to the transesterification reactor at a rate that is greater than the stoichiometric amount of alcohol required for transesterification; and

(C) separating the product of step (B) into a fatty acid alkyl ester rich stream and a glycerin rich stream; and

(D) purifying the fatty acid alkyl ester rich stream by distillation or fractionation to produce purified biodiesel without subjecting the fatty acid alkyl ester rich stream to water washing.

228. (New) The product produced by the process of claim 227.